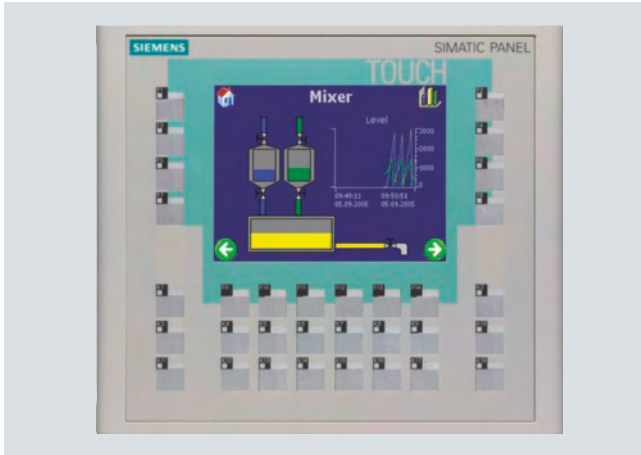


# Operator control and process monitoring devices

## Panels – 170 series

### SIMATIC OP 177B

#### Overview



- Touch / Key Panel with comprehensive functions for operator control and monitoring of machines and plants
- Content of message buffer is retained even when panel is disconnected, without batteries
- Pixel-graphics STN blue-mode / color display with analog touch screen and additional 32 function keys
- Interfaces for communication with Siemens SIMATIC S7 (e.g. MPI, PROFIBUS DP) are on-board
- Ethernet is on-board in the color version
- Drivers are also available for non-Siemens PLCs
- Installation compatible with OP17

#### Benefits

- Reduction of service and commissioning costs through:
  - Backup / restoration via a process interface or optionally via a Multimedia Card / SD Card
  - Remote downloading of the configuration with automatic transfer recognition via all device interfaces
  - Maintenance-free design (no battery) and long service life of the backlighting
  - System keys that can be assigned to any function keys and used as an alternative to or in parallel with the on-screen keyboard
- Maintenance-free message buffer
- Can be used worldwide:
  - 32 languages can be configured (incl. Asian and Cyrillic character sets)
  - Online language can be selected directly on the device
- Language-dependent texts and graphics
- Graphics library available with off-the-shelf picture objects
- Standard interfaces for increasing the flexibility:
  - External Multimedia Card / SD Card, used for recipe data sets and for backup of the configuration / system data
- Integrated USB interface for connecting, for example, standard printers
- Simple engineering supported by comprehensive documentation on the SIMATIC HMI Manual Collection DVD
- Integral component of Totally Integrated Automation (TIA):
  - Increases productivity, minimizes engineering outlay, reduces lifecycle costs

#### Application

Thanks to their practical functions and large user memory, OP 177B Operator Panels can be used wherever operator control and monitoring of machines and plants is necessary on site – whether in production automation, process automation or building-services automation.

The OP 177B is available with a 4-color blue mode display or a 256-color STN display. The color variant complete with an integral PROFINET I/O interface can be implemented with even greater flexibility. A USB port is standard on both model types. A further highlight is the non-volatile message buffer included as standard that stores messages permanently without battery backup.

**Design**

- 256 colors with color display or 4 blue-mode monochrome STN display
- CCFL<sup>1)</sup> long-life backlighting
- Analog resistive touch screen and membrane keyboard with 32 function keys
- Numeric and alphanumeric on-screen keyboard
- High performance thanks to RISC processor and 2 MB user memory, plus additional integrated recipe memory
- The data in the message buffer are retained even when panel is disconnected from the power supply, without batteries
- MPI, PROFIBUS DP interfaces (up to 12 Mbaud) as well as USB 1.1 (max. 100 mA) on-board
- Ethernet (PROFINET I/O-capable) with the color variant
- Integrated USB interface
- Can be configured using SIMATIC WinCC flexible 2005 Compact and higher
- Complete functionality for demanding tasks
- Comprehensive Reichert graphics library
- Multimedia Card / SD Card slot  
Multimedia Cards or Standard SD Cards, can be used for standard Multimedia Cards (for backing up recipe data sets, the configuration, and system data)
- Remote downloading of the configuration via all interfaces with automatic transfer recognition
- The SINUMERIK, Sm@rtAccess and Sm@rtService options can be used
- Service-friendly thanks to maintenance-free design and long service life of the backlighting display

<sup>1)</sup> Cold Cathode Fluorescent Lamps

**Function**

- Permanent window and template concept for creating screen templates
- Input / output fields  
for visualizing and editing process parameters
- Configurable buttons  
with up to 16 functions are also used to directly trigger functions and actions
- Indicator light  
for machine and plant status indication
- Predefined texts  
for labeling function keys, process images and process values in any character size
- Help texts  
for process displays, messages, and variables
- Vector graphics, graphics  
can be used as icons instead of text for "labeling" buttons. They can also be used as full-screen background images. The configuration tool contains a library with extensive graphics and diverse objects. All editors with an OLE interface can be used as graphics editors (such as PaintShop, Designer or CorelDraw).
- Curve functions and bars  
are used for the display of dynamic values in graphics-based format
- Dynamic positioning of objects and dynamic showing / hiding of objects
- Arithmetic functions, limit value monitoring  
for reliable process control with inputs and outputs

- Online language selection with 5 selectable languages, incl. Asian and Cyrillic languages  
this also applies to language-specific graphics
- Scheduler  
for cyclic function execution
- Password protection (security)  
User management – Authentication by means of user ID and password, plus privileges specific to user groups, which is an integral part of SIMATIC
- Signaling system;  
Freely definable message classes (acknowledgement behavior and display can be configured), administration of status, fault and system alarms. The message history is retained even if the device is switched off.  
Analog alarms (limit value messages) in addition to bit messages
- Recipe management
  - With additional data storage (on ext. storage medium)
  - Online / offline processing on the panel
  - Storage of recipe data in standard Windows format (CSV)
  - External processing using standard tools such as Excel and Access is possible
- Multimedia Card / SD Card compatibility  
for external standard data carriers, can be used for backup / restoration or for transporting recipe data records
- User-friendly maintenance and configuration thanks to:
  - Backup and restoration of the configuration, operating system, data records and firmware on a PC using ProSave
  - Option to download / upload the configuration via all device interfaces (with automatic transfer detection)
  - Individual contrast setting and calibration
  - Configuration simulation directly on the configuration computer

**Configuring**

The equipment is configured using the innovative engineering tool SIMATIC WinCC flexible from version 2005 (Compact Edition and above). SIMATIC WinCC flexible is the logical further development of the field-proven ProTool family.

Projects generated using ProTool can be easily migrated to WinCC. When OP17 projects are implemented, the project engineer must make certain changes following conversion as a result of the innovated display technology. Support is however provided by WinCC flexible.

OP 170B projects can be loaded problem-free because all operator control actions can be performed using the on-screen keyboard. If WinCC flexible is started directly from SIMATIC Manager, data in STEP 7 can be accessed directly at the click of a mouse button when the panel is configured. Duplicated data input and data management is, therefore, avoided.

**Additional options**

- SINUMERIK  
Optionally with "SINUMERIK HMI copy license WinCC flexible CE". For configuration, a "SINUMERIK HMI engineering package WinCC flexible" is also necessary.  
For further information, see the NC 60 Catalog.
- Sm@rtService  
Remote operator control and monitoring of SIMATIC HMI systems based on TCP/IP networks
- Sm@rtAccess  
Communication between HMI systems based on TCP/IP networks. Remote access to recipe data sets, passwords and information specific to the HMI system, and much more.

# Operator control and process monitoring devices

## Panels – 170 series

### SIMATIC OP 177B

#### Technical specifications

	6AV6 642-0DC01-1AX1	6AV6 642-0DA01-1AX1
SIMATIC OP 177B	OP 177B Bluemode	OP 177B color
<b>Supply voltage</b>		
Supply voltage	24 V DC	24 V DC
permissible range	+20.4 V ... +28.8 V DC	+20.4 V ... +28.8 V DC
Rated current	0.24 A	0.24 A
<b>Memory</b>		
Type	Flash / RAM	Flash / RAM
Usable memory for user data	2 048 KByte usable memory for user data	2 048 KByte usable memory for user data
<b>Time of day</b>		
Clock		
• Type	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable
<b>Protocols</b>		
Protocols (terminal link)		
• Sm@rtAccess	Yes	Yes
<b>Configuring</b>		
Configuring tool	WinCC flexible Compact Version 2005 or higher (to be ordered separately)	WinCC flexible Compact Version 2005 or higher (to be ordered separately)
<b>Display</b>		
Display type	STN, 4 shades of blue	STN, 256 colors
Size	5.7" (120 mm x 90 mm)	5.7" (120 mm x 90 mm)
Resolution (WxH in pixel)	320 x 240	320 x 240
Backlighting		
• MTBF backlighting (at 25 °C)	about 50 000 hours	about 50 000 hours
<b>Operating mode</b>		
Control elements	Membrane keyboard	Membrane keyboard
Function keys, programmable	32 function keys, 26 with LEDs	32 function keys, 26 with LEDs
Connection for mouse / keyboard / barcode reader	USB / USB / USB	USB / USB / USB
Touch operation		
• Touch screen	analog, resistive	analog, resistive
• Numeric / alphabetical input	Yes / Yes	Yes / Yes
<b>Ambient conditions</b>		
Mounting position	vertical	vertical
maximum permissible angle of inclination without external ventilation	+/- 35 °	+/- 35 °
max. relative humidity (in %)	90 %	90 %

	6AV6 642-0DC01-1AX1	6AV6 642-0DA01-1AX1
SIMATIC OP 177B	OP 177B Bluemode	OP 177B color
<b>Ambient conditions (continued)</b>		
Temperature		
• Operation (vertical installation)	0 °C ... +50 °C	0 °C ... +50 °C
• Operation (max. tilt angle)	0 °C ... +40 °C	0 °C ... +40 °C
• Transport, storage	-20 °C ... +60 °C	-20 °C ... +60 °C
<b>Degree of protection</b>		
Front	IP65, NEMA 4x, NEMA 12 (when installed)	IP65, NEMA 4x, NEMA 12 (when installed)
Rear	IP20	IP20
<b>Certifications &amp; standards</b>		
Certifications	CE, GL, ABS, BV, DNV, LRS, FM Class I Div. 2, UL, CSA, cULus, EX Zone 2, EX Zone 22, C-TICK, NEMA 4x, NEMA 12	CE, GL, ABS, BV, DNV, LRS, FM Class I Div. 2, UL, CSA, cULus, EX Zone 2, EX Zone 22, C-TICK, NEMA 4x, NEMA 12
<b>I/O</b>		
I/O devices	Printer	Printer
<b>Type of output</b>		
LED colors	Green	Green
<b>Interfaces</b>		
Interfaces	RS232 optional, 1 x RS422, 1 x RS485 (max. 12 Mbit/s)	RS232 optional, 1 x RS422, 1 x RS485, 1 x Ethernet (RJ45) (max. 12 Mbit/s)
PC card slot	No	No
CF card slot	No	No
USB port	1 x USB	1 x USB
Multimedia Card / SD card slot		
Industrial Ethernet interface	No	1 x Ethernet (RJ45)
<b>Operating systems</b>		
Operating system	Windows CE	Windows CE
<b>Processor</b>		
Processor	ARM, 200 MHz	ARM, 200 MHz
<b>Functionality under WinCC flexible</b>		
Applications / options	Sm@rtService, Sm@rtAccess	Sm@rtService, Sm@rtAccess
Task planner	Yes	Yes
Help system	Yes	Yes
Status / control	with SIMATIC S7	with SIMATIC S7

# Operator control and process monitoring devices

## Panels – 170 series

## SIMATIC OP 177B

## Technical specifications (continued)

SIMATIC OP 177B	6AV6 642-0DC01-1AX1 OP 177B Bluemode	6AV6 642-0DA01-1AX1 OP 177B color
<b>Functionality under WinCC flexible</b> (continued)		
With alarm logging system (incl. buffer and acknowledgment)		
• Number of messages	2 000	2 000
• Bit messages	Yes	Yes
• Analog messages	Yes	Yes
• Message buffer	Ring buffer (n x 256 entries), retentive, maintenance-free	Ring buffer (n x 256 entries), retentive, maintenance-free
Recipes		
• Recipes	100	100
• Data records per recipe	200	200
• Entries per data record	200	200
• Recipe memory	32 KB integrated Flash, expandable	32 KB integrated Flash, expandable
Number of process images		
• Process images	500	500
• Variables	1 000	1 000
• Limit values	Yes	Yes
• Multiplexing	Yes	Yes
Image elements		
• Text objects	2,500 text elements	2,500 text elements
• Graphics object	Bit maps, icons, icon (full-screen), vector graphics	Bit maps, icons, icon (full-screen), vector graphics
• Dynamic objects	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons
Lists		
• Text lists	300	300
• Graphics list	100	100
• Libraries	Yes	Yes
Security		
• Number of user groups	50	50
• Passwords exportable	Yes	Yes
• Number of user rights	32	32

SIMATIC OP 177B	6AV6 642-0DC01-1AX1 OP 177B Bluemode	6AV6 642-0DA01-1AX1 OP 177B color
<b>Functionality under WinCC flexible</b> (continued)		
Data carrier support		
• PC card / CF card	No / No	No / No
• Multi Media Card	Yes	Yes
Recording		
• Recording / Printing	Alarms, report (shift report), hardcopy	Alarms, report (shift report), color print, hardcopy
• Printer driver	ESC/P2, PCL3 / PCL6	ESC/P2, PCL3 / PCL6
Fonts		
• Keyboard fonts	US American (English)	US American (English)
Languages		
• Online languages	5	5
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	Tahoma, Courier New, WinCC flexible Standard, symbol languages, 2 additional character sets can be loaded, all freely scalable	Tahoma, Courier New, WinCC flexible Standard, symbol languages, 2 additional character sets can be loaded, all freely scalable
Transfer (upload / download)		
• Transfer of configuration	MPI / PROFIBUS DP, serial, USB, by means of external storage medium, automatic transfer recognition	MPI / PROFIBUS DP, serial, USB, Ethernet, by means of external storage medium, automatic transfer recognition
Process coupling		
• Connection to controller	S5, S7-200, S7-300 / 400, Win AC, SINUMERIK, SIMOTION, Allen Bradley (DF1), Mitsubishi (FX), Telemecanique (ADJUST), Modicon (Modbus), for further non-Siemens drivers, see section on "System interfaces"	S5, S7-200, S7-300 / 400, Win AC, PC (TCP/IP), SINUMERIK, SIMOTION, Allen Bradley (DF1), Mitsubishi (FX), Telemecanique (ADJUST), Modicon (Modbus), for further non-Siemens drivers, see section on "System interfaces"
Expandability / openness		
• Open Platform Program	Yes	Yes
<b>Dimensions</b>		
Front of enclosure (W x H)	243 mm x 212 mm	243 mm x 212 mm
Mounting cutout / device depth (W x H)	229 mm x 196 mm / 45 mm device depth	229 mm x 196 mm / 45 mm device depth
<b>Weight</b>		
Weight	1 kg	1 kg

# Operator control and process monitoring devices

## Panels – 170 series

### SIMATIC OP 177B

#### Ordering data

Order No.

Order No.

#### SIMATIC OP 177B

Operator panel with 5.7" STN display,

- Blue mode (4 levels)

H

6AV6 642-0DC01-1AX1

- Color (256 colors)

H

6AV6 642-0DA01-1AX1

incl. mounting accessories

#### OP 177B starter kit

H

6AV6 551-2HA01-1AA0

Consisting of:

- OP 177B with STN display, color
- Configuration software SIMATIC WinCC flexible Compact
- SIMATIC HMI Manual Collection (DVD), 5 languages (En, Fr, Ger, It, Sp)

#### Configuring software

with SIMATIC WinCC flexible Compact

see HMI software chapter 4

#### Configuration set

G

6AV6 621-0AA01-0AA0

Consisting of:  
SIMATIC WinCC flexible Compact engineering software,  
SIMATIC HMI Manual Collection (DVD), 5 languages (English, French, German, Italian and Spanish), PC/PPI cable Multimeter, MPI cable (5 m) (for download and test purposes only)

#### Documentation (to be ordered separately)

#### Operating Instructions TP 177micro/TP 177A/TP 177B/ OP 177B (WinCC flexible)

- German
- English
- French
- Italian
- Spanish

6AV6 691-1DG01-0AA1

6AV6 691-1DG01-0AB1

6AV6 691-1DG01-0AC1

6AV6 691-1DG01-0AD1

6AV6 691-1DG01-0AE1

#### Documentation (to be ordered separately) (continued)

#### User Manual WinCC flexible Compact / Standard / Advanced

- German
- English
- French
- Italian
- Spanish

6AV6 691-1AB01-3AA0

6AV6 691-1AB01-3AB0

6AV6 691-1AB01-3AC0

6AV6 691-1AB01-3AD0

6AV6 691-1AB01-3AE0

#### User Manual WinCC flexible Communication

- German
- English
- French
- Italian
- Spanish

6AV6 691-1CA01-3AA0

6AV6 691-1CA01-3AB0

6AV6 691-1CA01-3AC0

6AV6 691-1CA01-3AD0

6AV6 691-1CA01-3AE0

#### SIMATIC HMI Manual Collection

A

6AV6 691-1SA01-0AX0

Electronic documentation,  
on DVD

5 languages (English, French,  
German, Italian and Spanish);  
contains: all currently available  
user manuals, manuals and  
communication manuals for  
SIMATIC HMI

#### Accessories for supplementary ordering

see HMI Accessories page 2/160  
onwards

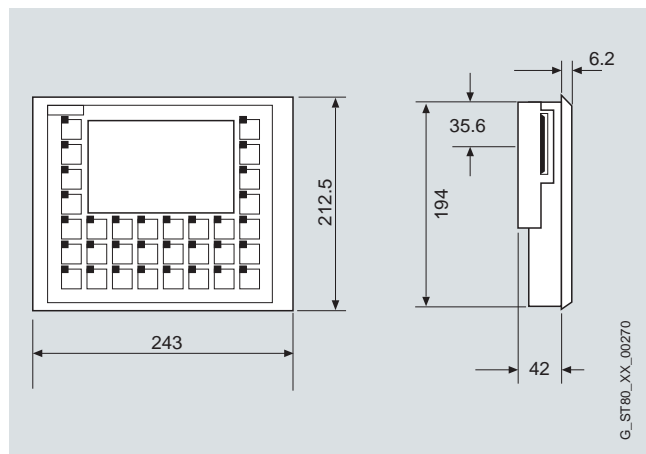
A: Subject to export regulations: AL: N and ECCN: EAR99S

G: Subject to export regulations: AL: N and ECCN: 5D992

H: Subject to export regulations: AL: N and ECCN: 5D002ENC3

#### Dimensions

All specifications in mm. Panel cutout see technical specifications.



SIMATIC OP 177B

#### Further information

Further information is available in the Internet under:

<http://www.siemens.com/simatic-panels>

#### Note:

Do you need a specific modification or option for the products described here? Then look up "Customized products", where you will find information about additional sector-specific products that can be ordered as well as about options for customer-specific modification and adaptation.